



## **TRMM PR/TMI Rainfall over Ocean in 3G68 Datasets**

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The differences between rain estimates from the TRMM precipitation radar (PR) and TRMM microwave imager (TMI) over the tropical ocean are analyzed using 3G68 gridded rainfall product. In addition, the differences in rainfall between the two recent versions (V5 and V6) of the same product are also inter-compared. TRMM version 5 and 6 data sets include unconditional rain rate, total pixel number and percentage of convective rain for the period 1998-2003 on a 0.5 by 0.5 grid. In order to perform a comparison study, we constructed a masked TMI data based on PR swath. Since the rain pixel informations are available with the standard product, we were able to compute the conditional rain estimates, which is the average amount of rainfall based on rainy pixels, and are analyzed in detail in the present study.

In order to find the relationship between the rain estimates to different convective/stratiform regimes, we examined the conditional rainfall differences between TMI and PR and its distribution with respect to their convective percentages. Our previous analysis with V5 data revealed that the coherent differences in TMI and PR conditional rain are distinctly associated to different life stages of convection. For example, during the formative stages of convection PR rain estimates are larger than those obtained by TMI. Where as during the mature to decaying stages of convection, TMI considerably estimates larger rain than PR. This is further confirmed by utilizing the VIRS brightness temperature of the same satellite. One of the physical plausible reason suggested for this difference in larger TMI rain was due to the time lag between the time of maximum rain rate and the time of maximum cloud top height, in addition to the possible increased back radiation due to large ice-scattering effect near cloud top and the lack of melting layer effect. These results were inter compared on both the versions and the results will be presented in detail.